



MEMORANDUM

To: Members of the Cash Management Policy Board
Cc: Nohora Gonzalez, Deputy State Treasurer; Jason Staib, Deputy Attorney General
From: Ken Simpler, State Treasurer
Sent: May 23, 2018
RE: Recommendation Regarding School and Special Fund Interest Payments

Context

The Cash Management Policy Board (the Board) is tasked with setting the interest rate paid on School and Special Funds (SSFs) on deposit with the Office of the State Treasurer (OST). OST conducted an analysis of the SSF rate setting methodology in FY17, the results of which were used as the basis for the FY18 SSF rate. The Board determined that it would be appropriate to reexamine the rate and methodology annually, to provide ongoing assurance that the deposited funds are paid an appropriate and equitable rate, consistent with prevailing market conditions. OST has re-examined the approved FY18 SSF rate calculation methodology and is providing the following recommendation for setting a rate in FY19.

Background

Prior to the FY18 rate revision, SSFs were paid a pro-rata monthly return equal to the return on the book value of the State's liquidity portfolio in the corresponding month. OST has not been able to determine the historical basis for paying the liquidity rate, outside of the fact that the vast majority of SSFs on deposit with OST are treated as liquidity funds and spent down over the course of one year. The appropriateness of the liquidity rate was only called into question when it became apparent that there are months when the liquidity return exceeded the total return on the State's total portfolio. In these months, the General Fund was having to make payments to SSFs, otherwise known as negative arbitrage.

These negative arbitrage months are closely aligned with rising short term interest rate environments—times when the State's total return is already strained due to the longer dated duration of the total portfolio. Additionally, the historical liquidity-based SSF return was based on monthly, non-annualized liquidity returns. The lack of smoothing in this methodology produces inherently volatile month-over-month returns.

The strain of negative arbitrage months and the unpredictability of month-over-month volatility led OST to recommend that the Board adopt a smoothed rate for SSFs, linked more closely to the underlying time horizon of the funds on deposit. At the July 13, 2017 meeting, the Board approved a recommendation¹ for FY18 that the rate paid on SSFs be set as an averaged, historical ratio [Figure 1] of the 6-month U.S. Treasuries to 2-year Treasuries against the total portfolio yield. Per

¹ See attached June 15, 2017 memo for reference

the Board’s request, OST has conducted the first annual review of the adopted SSF rate setting methodology and presents the following findings and recommendations.

Figure 1: FY18 SSF Rate-Setting Methodology



Findings

The time horizon-based ratio adopted as the FY18 SSF rate did in fact eliminate instances of negative arbitrage months, in both FY18 and in back-tested months, but the possibility still remained. Several other issues have emerged in the time since the rate was adopted that have called into question the appropriateness and equity of the time horizon ratio.

The FY18 SSF rate calculation has provided an average rate of return of 48 basis points (0.48%) year-to-date, as of February 28, 2018. This return is slightly higher than the FY18 return projections of 45 basis points (0.45%) in last year’s memo. Interest rates have begun to rise in the time since FY18 projections were made, so current market rates, such as those paid on money market funds, are now paying higher yields than the SSF rate. As a point of reference, the State has earned 98 basis points (0.98%) year-to-date in FY18 on its Federated Government Obligations Money Market Fund used in the State’s sweep products.

Paying an SSF rate that is perfectly aligned with current market rates would expose SSFs to much of the volatility that the total portfolio experiences. The current rate uses a twelve-month rolling average of monthly portfolio returns to smooth some of the volatility, such as instances where total portfolio returns are negative. However, the lag in the smoothed monthly returns under the twelve-month rolling average methodology is quite disparate from the market rates being paid in the current rising rate environment. The disparity between the SSF rate and Money Market Fund returns has resulted in a few inquiries from school district financial officers seeking an explanation for the diminished return that they are receiving, relative to the prevailing market rates.

Additionally, the assumptions within the time horizon-based ratio are no longer appropriate given the Board’s recent restructuring of the State’s investment architecture. While the average maturity of the SSFs on deposit has not changed, the new investment architecture will ultimately elongate the total portfolio duration from two years to slightly above four years. As of April 1, 2018, the new architecture is in place, though the rebalancing and elongating of portfolios is occurring gradually, as market conditions permit. As a result of the gradual transition, current total portfolio duration is closer to three years. The variable nature of any ratio based on underlying duration of the total portfolio makes any time horizon-based ratio less attractive as an SSF rate setting methodology.

Analysis

OST ran analyses on several alternative methodologies to identify the most appropriate and equitable SSF rate, within the current framework of the State's new investment architecture. Each methodology was back-tested over a period of 20 years to approximate relative and absolute performance. The Fed Funds rate was used as a proxy for government money market fund rates as money market rates closely track the Fed Funds rate. OST also analyzed the impact of applying a fee to SSF returns, based on a pro-rata share of banking services costs. In all scenarios this fee resulted in an SSF return that was below Fed Fund rates.

Alternative Methodology #1: Liquidity-to-Total Return Ratio

A liquidity-to-total return ratio-based SSF rate would be set as the historical² ratio of liquidity returns over total portfolio returns, which generates a ratio of 58.7%. In this methodology, SSFs would receive 58.7% of the total portfolio return, regardless of the liquidity-to-total portfolio return ratio in a given month.

Benefits

- The spread between the liquidity-to-total return ratio-based SSF rate and the Fed Funds rate is positive
- The ratio based rate provides predictability

Drawbacks

- The possibility of negative arbitrage months still remains
- The hypothetical rate is based on the 20-year average embedded in a 30-year fixed income bull market. The hypothetical 58.7% liquidity-to-total return ratio might not be reflective of the liquidity-to-total return ratio in a fixed income bear market

Figure 2: Liquidity-to-Total Return Ratio



² 20-year average

Alternative Methodology #2: Collared Liquidity Rate (12-Month Rolling Average)

This methodology describes a collared liquidity return-based SSF rate set as the 12-month rolling average liquidity return, capped at 100% of the 12-month rolling average total portfolio return. The rate would have a floor at 0%, even when the liquidity return falls below zero.

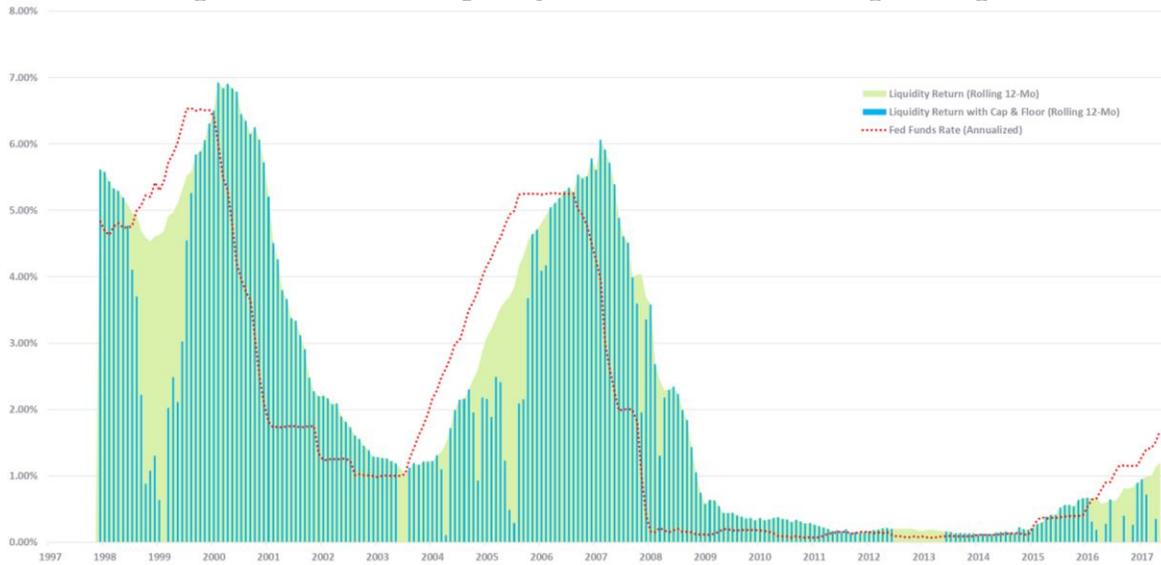
Benefits

- Negative arbitrage months are completely eliminated with the introduction of a floor
- Using a 12-month rolling average for smoothing generates only 20 months where no return would have been paid to SSFs (8% of months over a 20-year period)
- This rate outperforms the Fed Funds rate by 3 bps when returns and spreads are averaged over a 20-year period

Drawbacks

- This rate tracks the Fed Funds rate closely but on a 12-month lag

Figure 3: Collared Liquidity Rate (12-Month Rolling Average)



Alternative Methodology #3: Collared Liquidity Rate (Monthly, Non-annualized Returns)

This methodology describes a collared liquidity return-based SSF rate set as the monthly, non-annualized liquidity return, capped at 100% of the monthly, non-annualized total portfolio return. The rate would have a floor at 0%, even when the liquidity return falls below zero.

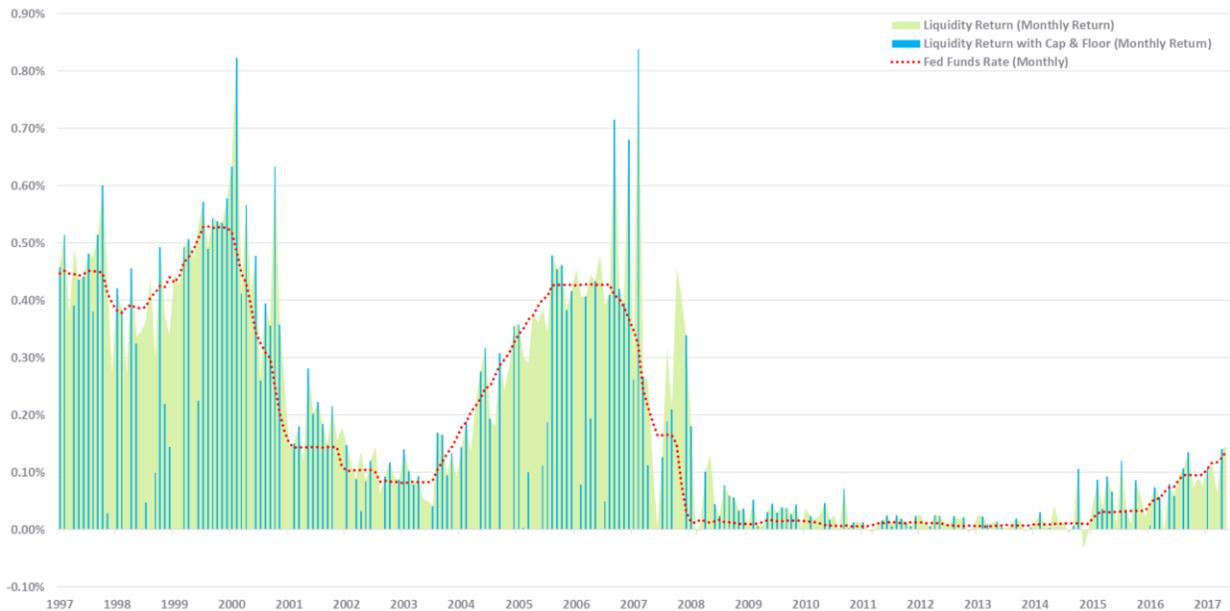
Benefits

- Negative arbitrage months are completely eliminated with the introduction of a floor
- This rate tracks the Fed Funds rate closely with no lag

Drawbacks

- The lack of smoothing generates 82 months where no return would have been paid to SSFs (33% of months over a 20-year period)

Figure 4: Collared Liquidity Rate (Monthly, Non-annualized Returns)



Recommendation

OST recommends that to the Board adopt Methodology #2, the Collared Liquidity Rate based on 12-month rolling averages, as the SSF rate for FY18 and beyond. The rate is both appropriate and equitable to SSFs and the General Fund alike. Its appropriateness is demonstrated in how proximate the returns are with government money market returns. Equity is demonstrated by the elimination of negative arbitrage months, and an assurance that SSFs will never be subject to negative returns. If adopted, this rate will address the challenges which are embedded in the current rate and the historical liquidity rate. Additionally, OST recommends that the Board uphold its practice of conducting an annual review of the SSF rate setting methodology, to review actual performance in current market conditions against projected performance.

Conclusion

OST has completed an annual review of the SSF rate, per the Board’s mandate. The completion of this review resulted in several findings and recommendations for the Board’s consideration.

- A time horizon-based rate is not appropriate during a time when the duration of the underlying total portfolio is transitioning
- The Board should adopt a collared liquidity return-based SSF rate, which would be set as the 12-month rolling average liquidity return, capped at 100% of the 12-month rolling average total portfolio return. The rate would have a floor at 0%
- The Board should uphold its practice of conducting an annual review of the SSF rate setting methodology

If adopted, these recommendations will satisfy the Board’s goal of providing an appropriate and equitable SSF rate that is both reflective of and responsive to market conditions.